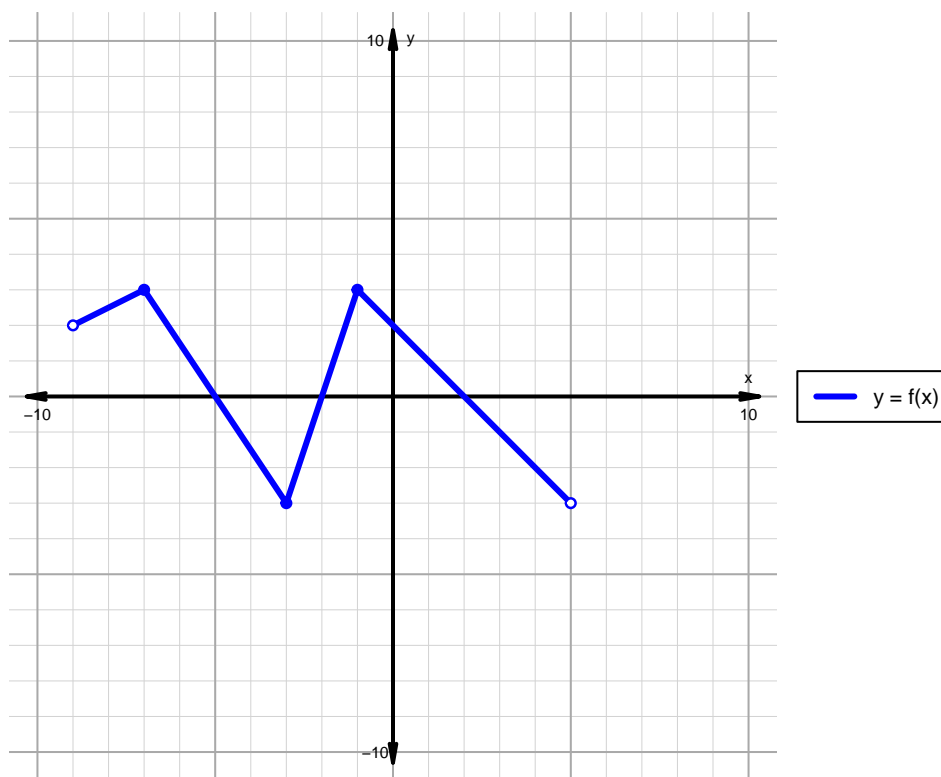# Intervals, Transformations, and Slope Solution (version 100)

1. The function f is graphed below.

Indicate the following intervals using interval notation. Remember, you can use $\cup$ between two intervals to indicate the union. Except for range, all intervals will indicate x values; this is standard.

Feature	Where
Positive	$(-9, -5) \cup (-2, 2)$
Negative	$(-5, -2) \cup (2, 5)$
Increasing	$(-9, -7) \cup (-3, -1)$
Decreasing	$(-7, -3) \cup (-1, 5)$
Domain	$(-9, 5)$
Range	$(-3, 3)$

Intervals, Transformations, and Slope Solution (version 100)
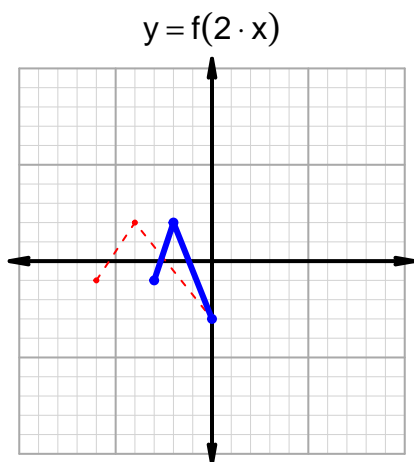
2. In the four graphs below, $y = f(x)$ is graphed as a dotted line. With a solid line, please graph the transformations indicated by the equations below.

$y = f(2 \cdot x)$

$y = f(x) + 2$

$y = f(x + 2)$

$y = 2 \cdot f(x)$
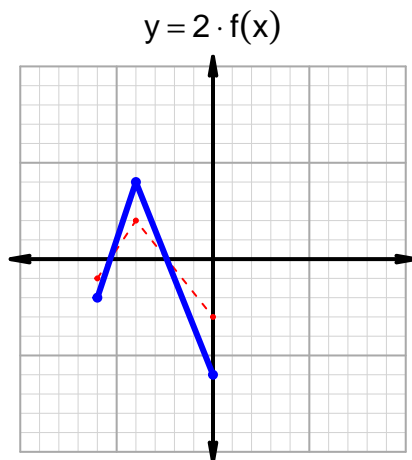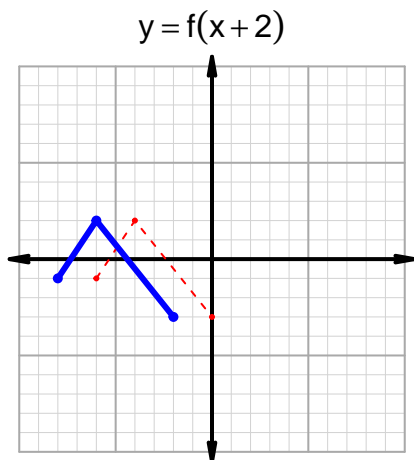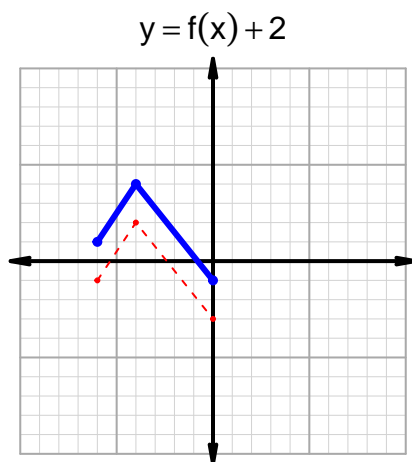
3. Let function g be defined by the table below. Use the formula $\frac{g(x_2) - g(x_1)}{x_2 - x_1}$ to find the average rate of change between $x_1 = 33$ and $x_2 = 47$. Express your answer as a reduced fraction.

x	$g(x)$
33	56
40	33
47	40
56	47

$\frac{g(47) - g(33)}{47 - 33} = \frac{40 - 56}{47 - 33} = \frac{-16}{14}$

The greatest common factor of -16 and 14 is 2. Divide numerator and denominator by the greatest common factor.

$$\text{AROC} = \frac{-8}{7}$$